



What Are the Domains of GLOBE Science Research?

In the broadest sense, the entire planet Earth is the domain of GLOBE science research. By collecting environmental data from around the world, scientists (and students) will have a better understanding of Earth and its interrelated cycles which comprise an integrated system. While scientists already have access to much data about Earth, GLOBE students will provide important new data to help the scientists. One value of the GLOBE student data is that it is worldwide, providing measurements from thousands of locations. Another value is that students do several different types of measurements at the same time, enabling scientists to study how Earth's land, air, water and biology systems interact. Finally, GLOBE students contribute their own analyses of their local study sites, becoming in a very real sense, the world's experts on their own study area, which will in turn help the scientists in their research.

Currently, there are four domains of GLOBE scientific research. Each is detailed in one of the GLOBE investigations:

Atmosphere – Your students will conduct daily measurements of cloud cover and type, air temperature, precipitation, and its pH.

Hydrology – Your students will do weekly measurements of water transparency, temperature, dissolved oxygen, pH, either conductivity or salinity, alkalinity, and nitrate-nitrogen of a body of water near the school.

Soil – Your students will expose a soil profile, take soil samples, and analyze them to determine the characteristics of various soil layers. They also will do daily to monthly measurements of soil moisture at various depths and locations, measure the rate at which water infiltrates the soil, and take weekly measurements of near-surface soil temperature.

Land Cover/Biology – Your students will monitor

change in a local land Biology Study Site and observe other Quantitative Land Cover Sample Sites where they will identify the dominant and subdominant species of vegetation and take measurements that help scientists assess the total amount of biomass on the site. Your students will also compare what they measure on the ground at Qualitative as well as Quantitative Land Cover Sample Sites with images of the same area taken from space by the Thematic Mapper instrument aboard the Landsat satellite.

In addition to these direct investigations, there are two supportive investigations included in GLOBE:

GPS – The Global Positioning System (GPS) is a new technology that enables you and your students to determine the latitude, longitude, and elevation, of your various sites using a small hand-held receiver and a set of Earth-orbiting satellites. This information is essential so that scientists and others will always know where your measurements were taken.

Seasons Investigation – In this investigation, learning activities are provided that you can use to help your students analyze the data they have collected to investigate annual seasonal changes in their local study sites and elsewhere in the world. In so doing, your students develop skills of scientific investigation and learn how the atmosphere, hydrology, soil and land cover measurements are interrelated.

